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INL and NASA launch UAVs to evaluate earthbound missions

Hundreds of miles from the legendary California research centers where pioneering aircraft like the supersonic X-1 were put through their paces, National Aeronautics and Space Administration representatives are pushing the envelope in the Idaho desert with a very different, but equally unique aircraft. These space agency specialists are working with engineers from the U.S. Department of Energy's Idaho National Laboratory to test unmanned aerial vehicles as part of a NASA-sponsored program to evaluate potential fire-fighting support from small, robotic planes.

Today's big fires are mapped using manned aircraft, fitted with thermal sensors that fly at night over hot spots and fire perimeters. Data from the plane's sensors are transmitted to staff at fire management operations centers who use the information to make decisions on when and where to send in equipment or firefighters. NASA teams from the Ames Research Center and Dryden Flight Research Center are investigating whether it makes sense to use flocks of small, inexpensive UAVs carrying a variety of sensors for such routine surveillance.

Last year, the INL UAV program team made history when it simultaneously flew five autonomous aircraft from a common ground station for a project sponsored by the Defense Advanced Research Projects Agency. It was this type of accomplishment, along with the hundreds of associated flight hours that led NASA to INL.

"It's one thing to do simulations, but sooner or later you have to do it for real – get your hands dirty," said Jack Ryan of NASA's Dryden Center. "INL is renowned for its skill in operating small-sized UAVs." NASA engineers are specifically interested in coordinated maneuvering and envision the UAVs working in concert like a flock of birds or a school of fish.

In a demonstration flight for the NASA project, a single UAV's payload included a video camera, which sent back live images to the observers.

"I thought this was possible for a long time," said Everett Hinkley of the U.S. Forest Service Remote Sensing Applications Center, attending the demonstration and watching the live color video feed. "This technology could be used to show you what the fire is doing right now, over the hill." Hinkley and his organization evaluate technologies that can be used on the front lines, and provide the customer perspective.

"Those working research and development need to know what the firefighters need rather than create something and say go out and use this," said Hinkley. NASA, INL and Forest Service engineers are looking for technologies that are reliable, user-friendly, and either improve the speed and safety, or decrease the cost of firefighting. Research, time and many more flights will tell whether unmanned planes can meet those needs and begin routinely taking flight over the nation's forests.

Idaho National Laboratory is one of DOE's multi-year program national laboratories and performs work in each of the strategic goal areas of DOE – energy, national security, science and environment. The Laboratory is the nation's leading center of nuclear energy research and development that is managed and operated by Battelle Energy Alliance.

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